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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,744	11/04/2003	Kuniaki Mamitsu	01-103-CON6	6398
23400	7590	01/13/2005	EXAMINER	
POSZ & BETHARDS, PLC 11250 ROGER BACON DRIVE SUITE 10 RESTON, VA 20190			WILLIAMS, ALEXANDER O	
			ART UNIT	PAPER NUMBER
			2826	

DATE MAILED: 01/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/699,744	<b>Applicant(s)</b> MAMITSU ET AL.	
	<b>Examiner</b> Alexander O Williams	<b>Art Unit</b> 2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 02 November 2004 and 21 October 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 66-70 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 66-70 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☒ Certified copies of the priority documents have been received in Application No. 09/717,227.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/14 &amp; 8/10/04</u> . | 6) <input type="checkbox"/> Other: _____  |

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Serial Number: 10/699744 Attorney's Docket #: 01-103-CON6  
Filing Date: 11/4/2003; claimed foreign priority to 11/24/99; 3/24/00; 3/30/00;  
10/4/00

Applicant: Mamitsu et al.

Examiner: Alexander Williams

Applicant's Amendment filed 11/2/04 and Amendment filed 10/21/04 to the election of the Species of figure 10 (claims 66 and 67), filed 5/25/04, has been acknowledged.

Claims 1-65 have been canceled.

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 09/717227, filed on 11/22/2000.

The disclosure is objected to because of the following informalities: The related patent application dated should be updated.

Appropriate correction is required.

Claims 66 to 70 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In the specification, Applicant states "71) As shown in FIG. 10, the electrical connection between the control electrode and the control terminal 5 is provided by a bump 21 that is made

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of, for example, solder, brazing filler metal, conductive adhesive, or the like. According to this modified example, the wire bonding step needs not be performed, and the control terminal 5 can be bonded simultaneously with the bonding between the Si chips 1a, 1b and the radiation members 2, 3. Thus, the manufacturing process can be simplified. Also, wire flow of wire bond does not occur during the resin sealing." Applicant's claim 66, now claims "the bump formed of resin, the control terminal securely bonded to the semiconductor chip using only the bump" and in claim 68, now claims "the bump formed of conductive resin, the bump for providing a secure bond between the semiconductor chip and a control terminal." A resin bump is not described or shown in the specification as it relates to the elected species of figure 10.

Claims 66 to 70 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 66, it is unclear and confusing to what is meant by and how is the phrase "the bump formed of resin, the control terminal securely bonded to the semiconductor chip using only the bump." How is a resin bump is not described or shown in

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the specification as it relates to the elected species of figure 10.

In claim 68, it is unclear and confusing to what is meant by and how is the phrase "the bump formed of conductive resin, the bump for providing a secure bond between the semiconductor chip and a control terminal." How is a resin bump is not described or shown in the specification as it relates to the elected species of figure 10.

Any of claims 66 to 70 not specifically addressed above are rejected as being dependent on one or more of the claims which have been specifically objected to above.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of

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35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 66 to 70, **insofar as they can be understood**, are rejected under 35 U.S.C. § 103(a) as being unpatentable over Lee (U.S. Patent # 4,620,215) in view of Kaneko (Japan Patent # 2000-31355).

As to claim 66 and similar claim 68, Lee (figures 1 to 10) specifically figures 3 and 8 show a semiconductor device comprising: a semiconductor chip **70** comprising a bump **73** disposed on the semiconductor chip for being bonded to a control terminal **85,62**; the bump formed of resin, the control terminal securely bonded to the semiconductor chip using only the bump; first and second radiation members **80,63** thermally and electrically connected to the semiconductor chip interposed therebetween, and having a radiation surface for radiating heat from the semiconductor chip; and first **83,84** and second **74,77** bonding members respectively interposed between the first radiation member and the semiconductor chip and between the semiconductor chip and the second radiation member, wherein: the first and second radiation members are made of a metallic material that is superior to tungsten and molybdenum in at least one of an electrical conductivity and a thermal conductivity. Lee fail to explicitly show the bump formed of resin, the control terminal securely bonded to the semiconductor chip using only the bump in claim 66 and the bump formed of conductive resin, the bump for providing a secure bond between the semiconductor chip and a control terminal in similar claim 68.

Kaneko is cited for showing a semiconductor device. Specifically, Kaneko (figures 1 to 4) specifically figure 1 discloses a bump on the semiconductor chip for being bonded to a terminal, the bump form of resin for the purpose of providing a semiconductor device with good heat radiating characteristics for preventing damage to a semiconductor chip.

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As to claim 67 and 70, the semiconductor device of claim 66 and 68, the combination with Lee show wherein no wire is required to be bonded from the control terminal to the semiconductor chip for providing electrical communication with an external device.

Therefore, it would have been obvious to one of ordinary skill in the art to use Kaneko's resin bump to modify Lee's bump for the purpose of providing a semiconductor device with good heat radiating characteristics for preventing damage to a semiconductor chip.

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

## Response

Applicant's arguments filed 10/21/04 have been fully considered, but are moot in view of the new grounds of rejections detailed above.

The listed references are cited as of interest to this application, but not applied at this time.

Field of Search	Date
U.S. Class and subclass: 257/700,701,758,688,689,759,673,676,675,712,713,717, 720,718	8/4/04
Other Documentation: foreign patents and literature in 257/700,701,758,688,689,759,673,676,675,712,713,717, 720,718	8/4/04
Electronic data base(s): U.S. Patents EAST	8/4/04

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander O Williams whose telephone


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number is (571) 272 1924. The examiner can normally be reached on M-F 6:30-7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272 1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AOW  
1/9/05



Primary Patent Examiner  
Alexander O. Williams